

Serial No: 10/553,547

Art Unit: 2837  
Examiner: Andrew R. Millikin

**IN THE CLAIMS:**

1. Cancel
2. (Previously Amended) Pianoforte instrument according to claim 13, characterised in that the vibration energy that is generated externally by the sound-augmenting device is delivered in real time into the sound board via the delivering device, in addition to the vibration energy entering the sound board mechanically from the vibrating acoustic strings.
3. (Currently Amended) Pianoforte instrument according to claim 13, characterised in that the ~~sound-augmenting~~ memory device comprises a tone sample memory and in that tone samples are associated with the tones including the partial tones thereof from the tone sample memory, that correspond to the key actuations registered by the sensors in the action of the instrument.
4. Cancel
5. Cancel
6. (Currently Amended) Pianoforte instrument according to claim 13, including a tone modification device and an amplifier for amplifying the signals received from the tone modification device in order to deliver the amplified signal to the vibrating sound board module, ~~which amplifies the signals received from the control module.~~
7. (Currently Amended) Pianoforte instrument according to claim 6, characterised in that the signals issuing from the amplifier ~~module~~ are supplied ~~to the device~~ for delivering vibration

Serial No. 10/553,547

Art Unit: 2837

Examiner: Andrew R. Millikin

energy, ~~where they are~~ that is converted into mechanical vibrations and introduced into the sound board.

8. (Previously Amended) Pianoforte instrument according to claim 13, characterised in that the device for delivering vibration energy comprises one or more driver systems.

9-12 Cancel

13. (Previously Presented) Pianoforte instrument comprising:  
an action with keys and including strings which are struck via a mechanism when the keys are actuated and are made to vibrate;  
a sound board to which the vibrations of the strings are transmitted;  
a sensor associated with each action for detecting actuation of only the associated key and for recording corresponding movement of the key to generate an individual sensor data signal;  
a delivery device including a drive means for delivering additional vibration energy into the sound board;  
and a controller for receiving the sensor data signal to, in turn, control the drive means;  
said controller including a sound-augmenting device to which the measured values of the sensors are supplied, said sound-augmenting device including a memory device for compiling data corresponding to a desired sound characteristic in dependence on the measured values detected by the sensors and including a partial tone spectrum for each selected tone;  
and wherein the sound-augmenting device supplies the sound board with additional vibration energy, corresponding to the data obtained, via the drive means.

Serial No. 10/553,547

Art Unit: 2837  
Examiner: Andrew R. Millikin

14. (Currently Amended) Pianoforte instrument according to claim 13 wherein the sound-augmenting device includes a tone control device and the memory device includes a tone sample memory, the tone control device receiving the key actuation signals from the sensors ~~using, respectively combining the sensor data signal in order to select~~ and data from the tone sample memory, and wherein ~~limited to the sensor data signal signals of the actuated key and~~ the tone sample memory output ~~representing selected harmonics~~ are generated in real time.
15. (Previously Presented) Pianoforte instrument according to claim 14 wherein the tone control device retrieves data from the tone sample memory as partials of each individual tone that correspond to the respectively acoustically sounding tone because of the related key struck and wherein the tone control device retrieves in addition the signal from the key or action sensors specifying the key struck and held down during generating the acoustically produced tone.
16. (Currently Amended) Pianoforte instrument according to claim 15 including a tone modification device and wherein the tone sample memory functions as an external data source for the supply of any combination of partials of each individual tone for further processing by means of the tone modification ~~module~~ device to be finally supplied to the sound board.
17. (Currently Amended) Pianoforte instrument according to claim ~~16~~ 14 including a tone modification device coupled from the tone control device and for modifying the data received from the tone control device to modify the partial tone spectrum of each individual tone.
18. (Currently Amended) Pianoforte instrument according to claim 13 characterised in that the sound augmenting device comprises a tone control device and the memory device includes a sample memory device memorizing individual tone partials, and in that the tone control device receives the key actuation data originating from the sensors and receives the individual tone

Serial No. 10/553,547

Art Unit: 2837  
Examiner: Andrew R. Millikin

partial data associated with the corresponding tone the individual tone partials from the tone sample memory.

19. (Currently Amended) A pianoforte instrument that includes a vibrating sound board and a plurality of keys, comprising:

individual sensors associated with each key for delivering the actuation information of the actuated key to a tone control device;

a tone control device receiving the ~~date~~ data of the individual keys actuated to, in turn, select from a memory device the memorized data of the individual harmonics for the corresponding tone actuated;

a memory device ~~individually containing and memorizing the data of different overtones of each single tone for compiling data corresponding to a desired sound characteristic including a partial tone spectrum for each selected tone in dependence on the measured values of each sensor;~~ and

a tone modification device coupled from the tone control device for controlling the composition of the partial tone spectrum ~~combining the information of the mechanically actuated keys with the corresponding memorized range of overtones belonging to the tone actuated by actuating a key;~~

a control module ~~allowing to teach~~ for controlling the tone modification device ~~what combination of overtones and fractions thereof, such as the~~ so that a tone building process or ~~the~~ a tone decay process[,] may be individually selected and combined in order to be delivered in real time to the vibrating sound board and also to control ~~the~~ an amplifier with respect to the volume of vibrating energy to be delivered ~~through driving means~~ into the vibrating sound board; and

an amplifier amplifying the signals received from the tone modification device in order to deliver the amplified signal ~~through driver means~~ to the vibrating sound board.

Serial No. 10/553,547

Art Unit: 2837  
Examiner: Andrew R. Millikin

20. (Currently Amended) Pianoforte instrument according to claim 19 wherein the memory device includes ~~tone modification device includes a tone control device and~~ a tone sample memory, the tone control device receiving the key actuation signals from the sensors and using the sensor data signal to address data from the tone sample memory, the tone sample memory output representing selected harmonics that are generated in real time.
21. (New) Pianoforte instrument according to claim 19 wherein signals issuing from the amplifier are converted into mechanical vibrations and introduced into the vibrating sound board.
22. (New) Pianoforte instrument according to claim 21 including a device for delivering vibration energy comprising one or more driver systems at the vibrating sound board.
23. (New) Pianoforte instrument according to claim 13 wherein the sound-augmenting device includes a tone control device and the memory device includes a tone sample memory, the tone control device receiving and respectively combining the sensor data signal, as well as data from the tone sample memory, and wherein both the sensor data signal and tone sample memory output are generated in real time.
24. (New) Pianoforte instrument according to claim 23 wherein the tone control device retrieves data from the tone sample memory as tones or partial tones of a tone that correspond in pitch to the respectively played tone that is sensed.
25. (New) Pianoforte instrument according to claim 24 wherein the tone sample memory functions as an external data source for the supply of additional vibration energy to the sound board.

Serial No. 10/553,547

Art Unit: 2837

Examiner: Andrew R. Millikin

26. (New) Pianoforte instrument according to claim 25 including a tone modification device coupled from the tone control device and for modifying the data received from the tone control device to modify the partial tone spectrum of each individual tone.